Vessel Traffic Risk Assessment (VTRA) for Northern Puget Sound and the Strait of Juan de Fuca

The projected increased vessel traffic from the various port expansion projects has resulted in the need to better understand the potential risks (probability vs. consequences) posed by the increased vessel traffic and the options for managing this risk.

- A Vessel Traffic Risk Assessment (VTRA) for Northern Puget Sound and the Strait of Juan de Fuca is in the process of assessing the relative risk (probability x consequence) of a vessel incident resulting in damage to vessels and the potential for an associated significant oil spill occurring within the area of coverage between Pacific Ocean waters offshore from Buoy J, throughout the straits north of Admiralty Head (Puget Sound) and extending to the Canadian border in the Strait of Georgia. The methodology centers around a causal chain analysis that integrates maritime transportation simulation with an accident probability model and an oil outflow (consequence) model.
- This VTRA will build upon a 2005 Puget Sound region tank vessel risk assessment conducted by BP refinery/marine terminal (using the same methodology). The assessment is being performed by investigators from George Washington University (GWU) and Virginia Commonwealth University (VCU) through a contract with Makah Tribe and a grant from Puget Sound Partnership (PSP) developed in cooperation with the WA Department of Ecology.
- PSP and Puget Sound Harbor Safety Committee (PSHSC) are co-chairing the Steering Committee to oversee and help inform the VTRA. Members of the Steering Committee were established at the last PSHSC VTRA meeting on October 4, 2012 and are:
    - Co-Chairs:
        - Todd Hass (Puget Sound Partnership)
        - John Veentjer (Puget Sound Harbor Safety Committee)
    - Agency Leads:
        - Chip Boothe (alternate Jon Neel, WA Department of Ecology)
        - CDR Kiley Ross (Sector PS) and Bob McFarland (CGD13), US Coast Guard
        - Chad Bowechop, Makah Tribe
    - Steering Committee Members:
        - Mark Holmeyer (tug and barge)
        - Del Mackenzie (pilots)
        - Mike Moore (steamship lines)
        - Vince O'Halloran (labor)
        - Mike Doherty (WA Association of Counties)
        - Jeff Shaw (petroleum industry)

Contractors - Professors J. Rene van Dorp, George Washington University and Jason Merrick, Virginia Commonwealth University .

Project Phases & Process

- **Step #1:** The consultants will update vessel traffic and other data used in the 2005 analysis for the BP study through 2010 for developing a comparison of the geographic profile for oil spill risk.
- **Step #2:** Run simulation on those vessels having the greatest potential to spill large volumes of oil; create a visual comparison of the 2010 profile against the 2005 profile to indicate any geographic changes in oil spill risk by vessel type and location.
    - The **Focus Vessels** considered in this study are
        - *Tankers*
        - *Articulated Tug Barges (ATBs)*

        - *Integrated Tug Barges (ITBs)*
        - *Oil barges that dock at BP Cherry Point.*
        - *Container vessels*
        - *Bulk carriers*
    - **Interacting Vessels** - All other vessels in the system are still incorporated into the model as Interacting Vessels. Interacting Vessels are passenger ships, whale watching tour boats, fishing vessels, etc. interacting with the Focus Vessels in such close proximity that it could result in an accident and subsequent spill.
- **Step #3:** Impacts of proposed commercial marine terminal projects contributing vessel traffic to the study area will be modeled. Tentatively, three projects show the greatest "level of maturity" in development. This means that the Steering Committee has a relatively high degree of confidence that the projects could transition from paper to fruition, and that each has credible estimates of the types, numbers of vessels, and probable routes used for port calls over the coming decade.
    - *SSA* Marine Gateway Pacific Terminal (GPT) –Bulkers.
    - Kinder Morgan Pipeline expansion in BC – Tank vessel traffic.
    - Delta Port - Container and bulk coal traffic.
- **Step #4:** Once the results of the initial simulations for the 2010 vessel traffic, updated with traffic from the three projects (step #3 above) are known (geographic and/or quantitative changes in risk or oil outflow), the Steering Committee will be asked to develop a preliminary list of candidate risk mitigation strategies to be modeled and analyzed during the next phase of analysis.
- **Step #5:** Select and evaluate candidate risk reduction measures based upon the Puget Sound VTRA findings and conclusions.
- **Step #6:** USCG/Ecology/PSHSC, other sponsoring agencies and other marine interests will select and prioritize appropriate risk reduction measures for actual implementation.